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ABSTRACT

The degree of correlation existing between visual screening results obtained from the Keystone Visual Survey Telebinocular and the Titmus Biopter Vision Test was discussed. A sample of 59 children admitted to the University of Miami Reading Clinic during the 1969 summer session was used. They ranged in age from 7 to 16. All subjects were previously diagnosed as having reading difficulty. A trained examiner administered both tests to all subjects, rotating the order with each student. All subjects were screened with both instruments on the same day, and pass or fail for each student was determined using the criteria suggested by respective publishers. After obtaining point biserial correlation coefficients for the 12 paired subtests from the Keystone and Titmus tests, it was found that the correlation coefficients were too low to permit substitution of the Titmus for the Keystone instrument in either classroom or reading clinic. Other inexpensive vision screen instruments should be similarly compared with a suitable criterion to determine the feasibility of substituting one of these for the more expensive Keystone. References are included. (CL)

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A COMPARISON OF TWO VISION SCREENING BATTERIES FOR CLINICAL
AND CLASSROOM USE

The purpose of this study was to determine the degree of correlation existing between visual screening results obtained from the Keystone Visual Survey Telebinocular and the Titmus Biopter Vision Test. The Keystone Visual Survey Telebinocular is priced at \$316 and available from the Keystone View Company of Meadville, Pennsylvania. The Titmus Biopter Vision Test, comparably equipped and testing the same visual abilities, is priced at \$70 and available from Titmus Optical Company of Petersburg, Virginia. A less expensive Titmus Biopter with Vision Test but without controlled lighting and stand is available for approximately \$50.

If the correlation coefficients obtained between subtest scores on the two instruments were high, university and college reading programs might consider purchasing the less expensive Titmus Biopter instrument with Vision Tests and teaching the testing procedures in their clinic reading courses. By this means a valid and inexpensive vision screening instrument might eventually find its way into public schools where less desirable tests are often used.

The Keystone Visual Survey Telebinocular has been demonstrated an appropriate criterion. From an examination of 70 research and narrative publications on vision and reading, ⁽¹⁾ the writer believes that the major vision difficulties found among children with reading

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difficulties are tested by the Keystone Visual Survey Telebinocular.

The major criticism of this instrument seems to be overreferral and this is a criticism most often heard from vision specialists.

Overreferral as a criticism is not generally heard from reading specialists who are more concerned with underreferral. The Keystone Visual Survey Telebinocular results in few under-referrals according to a study completed by Blum, Peters, and Bettsman in 1959⁽²⁾ and commonly referred to as the Orinda Study.

Both the Telebinocular and the Biopter are binocular vision screening instruments. They are adjustable for varying heights, have supplementary light sources, and are portable. The Biopter weighs approximately two pounds and the Telebinocular between 15 and 25 pounds depending upon the unit. Both instruments have a standardized test routine and simplified record form. The standard vision survey for both instruments is the same except for labels.

FIGURE I SUBTEST COMPARISON FOR KEYSTONE VISUAL SURVEY TELEBINOCULAR AND TITMUS BIOPTER VISION TEST

Keystone Visual Survey

Far Point

Vertical Posture

Lateral Posture

Fusion

Useable Vision, Left

Useable Vision, Both

Useable Vision, Right

Titmus Vision Test

Far Point

Vertical Phoria

Lateral Phoria

Central Fusion

Acuity, Left

Acuity, Both

Acuity, Right

Stereopsis

Near Point

Lateral Posture

Fusion

Useable Vision, Left

Useable Vision, Both

Useable Vision, Right

Stereo

Near Point

Lateral Phoria

Central Fusion

Acuity, Left

Acuity, Both

Acuity, Right

The Keystone Visual Survey Telebinocular used in this study was part of the screening battery used by the Diagnostic Division of the University of Miami Reading Clinic. The instrument was in good repair at the time of the study. Referrals were continually being made on the basis of the results obtained with the Telebinocular and the lack of adverse feedback from parents and professionals seemed to indicate that the referrals were justified and the survey valid. The Titmus Biopter and Vision Tests used in this study were new and just obtained from the Titmus Vision Company prior to the study. The instrument was factory adjusted for accuracy and did not appear to have been damaged in transit.

The subjects for this study were 59 children admitted to the University of Miami Reading Clinic during the 1969 summer session. The subjects ranged in age from 7 through 16 with an average age of 11 years. All subjects were previously diagnosed as having reading difficulties. A trained examiner administered the Titmus Biopter Vision Test and the Keystone Vision Survey Telebinocular to all subjects. The order in which the instruments were administered was

rotated from subject to subject. All subjects were screened with both instruments on the same day. Pass or fail for each subject was determined using the criteria suggested by the respective publishers.

CORL 8 University of Miami computer program was used to obtain point biserial correlation coefficients for the 12 separate subtests of the Keystone Visual Survey Telebinocular and the Titmus Biopter Vision Test. The relationships found between the results obtained using the two instruments ranged from $-.04$ for fusion to $-.60$ for muscle balance. The point biserial correlation coefficients for the twelve paired subtests on the Keystone Visual Survey Telebinocular and the Titmus Biopter Vision Tests were as follows:

Far Point Subtests

- .49 vertical muscle balance
- .60 lateral muscle balance
- .04 fusion
- .34 acuity left eye
- .48 acuity both eyes
- .25 acuity right eye
- .28 stereopsis

Near Point Subtests

- .32 lateral muscle balance
- .20 fusion
- .18 acuity left eye
- .43 acuity both eyes
- .25 acuity right eye

On the basis of this study point biserial correlation coefficients for paired subtests' from the Keystone Visual Survey Telebinocular and the Titmus Biopter Vision Test are too low to support a recommendation for substituting the Titmus for the Keystone instrument in either classroom or reading clinic. Other inexpensive vision screening instruments are available and should be similarly compared with a suitable criterion to determine the feasibility of substituting one of these instruments for the more expensive Keystone instrument. In this way a less expensive substitute might be found for the Keystone test that could be used for classroom and clinic vision testing.

- (1) MANGRUM II, CHARLES T. Vision and Reading. Occasional Papers in Reading, Reading Program, Indiana University, Bloomington, Indiana, October, 1967.
- (2) BLUM, HENRIK L., PETERS, HENRY B., and BETTMAN, JEROME W. The Orinda Study, University of California Press, Los Angeles, 1959.